AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A method of decoding a signal vector, the method comprising the steps of:

receiving a signal vector $\mathbf{y}_k$;

multiplying the received signal vector $\mathbf{y}_k$ by a conjugate transpose of a channel matrix $\mathbf{H}^*$ and generating a column vector $\mathbf{z}_k$ therefrom;

reordering entries ~~associated with~~in the column vector $\mathbf{z}_k$ and generating an estimated channel matrix $\widetilde{\mathbf{H}}$ therefrom;

decomposing the estimated channel matrix $\widetilde{\mathbf{H}}$ via Cholesky decomposition and generating a triangular matrix **L** therefrom;

solving the triangular matrix **L** backwards and estimating a signal vector $\tilde{\mathbf{s}}_k$ therefrom~~, wherein $\tilde{\mathbf{s}}_k$ is a true sorted symbol vector~~; and

sorting the signal vector $\tilde{\mathbf{s}}_k$ and generating an estimate of ~~the~~a transmitted symbol vector $\hat{\mathbf{s}}_k$ therefrom.

2. (Currently Amended) The method according to claim 1, wherein the received signal vector $\mathbf{y}_k$ is represented by ~~the~~a relationship $\mathbf{y}_k = \mathbf{H}\mathbf{s}_k + \mathbf{v}$ and the column vector $\mathbf{z}_k$ is represented by ~~the~~a relationship $\mathbf{z}_k = \mathbf{H}^*\mathbf{H}\mathbf{s}_k + \mathbf{H}^*\mathbf{v}$, wherein **H** is a matrix of complex numbers, $\mathbf{s}_k$ is a multidimensional symbol vector transmitted at time *k*, **v** is a multidimensional vector of additive noise+interference, and $\mathbf{H}\mathbf{s}_k$ is ~~the~~a matrix product of **H** and **s.**

3. (Currently Amended) The method according to claim ~~2~~, wherein the multidimensional vector of additive noise+interference **v**, is represented by ~~the~~a relationship $\mathbf{L}^{*-1}\left(\tilde{\mathbf{H}}^{*}\mathbf{v} - \sigma^{2}\mathbf{I}_{M_t}\tilde{\mathbf{s}}_{k}\right)$, and further wherein **v** has a zero mean value with a covariance matrix defined as $\sigma^{2}\mathbf{I}_{M_t}$ under the assumption that associated communication system transmitters transmit each point in ~~the~~an associated communication system constellation with equal probability.